

IPM RATING OF PLANT PROTECTION PRODUCTS

The following system provides a means for growers to derive a quantitative IPM compatibility score for a spray programme in each orchard. This can serve as a tool for the grower to quantify the existing IPM implementation position on the farm, to set goals for improvement and to map progress. It can assist in making decisions in the selection of pesticides to be used when chemical intervention is required. It also makes it possible to develop benchmark scores for particular regions to serve as a reference point for growers in each region.

The following list provides a categorisation of the relative IPM compatibility of presently registered treatment options. The rating is aimed at providing an indication of the extent of non-target effects that can be expected from use of the product. The lower the rating, the more suitable the product is for IPM. An “additional application factor” is also provided. The aim of this factor is to discourage multiple applications of the same product for resistance management reasons.

The International Organisation for Biological Control categorises pesticide impact on biocontrol agents as Harmless, Slightly harmful, Moderately harmful or Harmful. In striving to maintain uniformity, CRI’s system has also placed individual product usages into one of four categories, each with a score, namely 1, 2, 4 or 9 (an exception is fruit fly baits that are only applied to a small portion of the tree). These values have been selected to cater for the need to keep the score for multiple applications of some IPM-compatible products in proportion to single applications of more disruptive treatments.

To derive a rating of IPM compatibility for the spray programme of a particular orchard, the scores for each pesticide application are added to obtain a total figure.

When a particular product has been applied more than once in a season, the scores of the two applications are added and then multiplied

by the additional application factor given in the table, (e.g., 2 sprays of tartar emetic have a score of 2.4 ($1 + 1 = 2$, $2 \times 1.2 = 2.4$). A third application will increase the score to 4.1 ($2.4 + 1 = 3.4$, $3.4 \times 1.2 = 4.1$) and a fourth application to 6.1 ($4.1 + 1 = 5.1$, $5.1 \times 1.2 = 6.1$).

If a treatment contains oil, such as abamectin plus oil, work out the score for the active ingredient alone with its application factor before adding the score for the oil which only has an application factor of 1.

The following thresholds provide a preliminary benchmarking guideline for assessing the IPM compatibility of a total score for the spray programme in a particular orchard. These guideline thresholds may require further refinement for some cultivar/region combinations.

Subtropical areas

- Score \leq 55: adequate IPM implementation.
- $55 < \text{score} < 70$: intermediate IPM implementation, improvement necessary.
- Score \geq 70: inadequate implementation, problematic.

Cool inland areas and Cape provinces

- Score \leq 45: adequate IPM implementation.
- $45 < \text{score} < 60$: intermediate IPM implementation, improvement necessary.
- Score \geq 60: inadequate implementation, problematic.

In a number of cases, available information is inadequate and consequently a rating could not be ascribed with confidence. This table is by no means an authoritative statement on the IPM compatibility of any particular product. It has only been possible to take presently available information into consideration.

As more information becomes available from bioassay tests and field experience, some of these ratings can be expected to change, so

check that you are using the latest version of this document.

Product (active ingredient) and common trade name	Rating for one application	Additional application factor
THRIPICIDES		
Abate (temephos)	9	2
Abamectin 20 ml	1	1.2
Akito (beta-cypermethrin) 20-25 ml	9	2
Calypso (thiacloprid)	4	2
Cypermethrin 15-20 ml	9	2
Dantop (clothianidin)	9	2
Delegate (spinetoram)	4	2
Dicarzol (formetanate) bait (ground or air)	4	2
Dursban WG (chlorpyrifos) 64 g	4	2
Erador (pyrethrum & neem)	2	1.2
Exirel (cyantraniliprole)	2	2
Hunter (chlorfenapyr)	9	2
Hunter (chlorfenapyr) bait	4	2
Klartan (tau-fluvalinate)	9	2
Meothrin (fenpropathrin)	9	2
Mesuro (methiocarb) bait	2	1.2
Mospilan (acetamiprid) spray	9	2
Profenofos (Selecron) 75 ml	4	2
Regent (fipronil)	9	2
Tartar emetic bait	1	1.2
Tokuthion (prothiofos)	4	2
Tracer (spinosad)	4	2
IGRs		
Alsystin (triflumuron) 1 or 2 applications	4	2
Applaud (buprofezin)	4	1.1
Methoxyfenozide (Runner)	2	2
Nemesis (pyriproxifen) 1 or more applications	9	1.2
Nomolt (teflubenzuron) 1 or 2 applications	4	2
ACARICIDES		
Acarol (bromopropylate)	2	1.2
Envidor (spirodiclofen)	2	1.2
Kelthane (dicofol)	4	1.2
Mitac (amitraz)	2	1.2
Mitigate (fenpyroximate)	2	1.2
Omite (propargite)	2	1.2
Pride (fenazaquin)	2	1.2
Sipcatin (cyhexatin)	2	1.2
Smite (etoxazole)	4	1.2
Sulfur	4	1.2
Tedion (tetradifon)	1	1.2
Torque (fenbutatin oxide)	2	1.2
OTHER INSECTICIDES		
Alpha-cypermethrin (on ant barrier or M3)	1	1.2
Aphox (pirimicarb)	2	1.2
Azodrin (monocrotophos) stem treatment (not available in South Africa)	1	1.2

Product (active ingredient) and common trade name	Rating for one application	Additional application factor
Citrimet (methamidophos) stem treatment	1	1.2
Closer (sulfoxaflor)	2	1.2
Coragen (chlorantraniliprole)	2	1.2
Cryptogran/Cryptex (granulovirus)	1	1.2
Dipel (<i>Bacillus thuringiensis</i> var. <i>kurstaki</i>)	1	1.2
Dipterex (trichlorfon) fruit fly bait	0.25	1.1
Dursban (chlorpyrifos) outside or full cover	4	2
Emamectin benzoate (Warlock)	2	1.2
Elsan (phenthoate)	4	2
Exirel (cyazypyr) fruit fly bait	0.25	1.1
Folimat (omethoate)	4	2
GF 120 (spinosad) fruit fly bait	0.1	1.1
Gusathion (azinphos-methyl)	4	2
Helicovir (nuclearpolyhedrovirus)	1	1.2
Imidacloprid soil treatment	2	2
Lannate (methomyl) outside or full cover	4	1.2
Malathion (mercaptopion) fruit fly bait - ground application	0.2	1.1
Malathion (mercaptopion) fruit fly bait - aerial application	2	1.1
Malathion (mercaptopion) spray	4	2
Malathion (mercaptopion) soil treatment for ants	2	1.2
Mevinphos outside or full cover	2	1.2
Miral (isazofos granule) soil treatment	2	2
Mospilan (acetamiprid) stem treatment	1	1.2
Mospilan (acetamiprid) spray	9	2
Movento (spirotetramat)	2	1.2
Oil (narrow distillation range) 0-0.3%	1	1
Oil (narrow distillation range) >0.3%	2	1
Parathion	4	2
Parathion nest spray on soil for ants	2	1.2
Permethrin in Last Call formulations	1	1.1
Rogor (dimethoate) spray or soil treatment	4	2
Selecron (profenofos) 100 ml	4	2
Siege (hydramethylnon) ant bait on soil	1	1.2
Suprathion (methidathion)	4	2
NEMATOCIDES		
AC92/Counter (terbufos)	9	2
Crop Guard (furfural)	1	1.2
<i>Paecilomyces lilacinus</i> (PL Gold)	1	1.2
MOCAP (ethoprophos)	2	2
Nemacur (fenamiphos)	2	2
Nemathorin (fosthiazate)	2	2
Rugby (cadusofos)	2	2
Temik (aldicarb) Not permitted in RSA	2	2
Velum (fluopyram)	2	2
PREHARVEST FUNGICIDES		
Aliette (fosetyl-AI) spray	1	1.2
Aliette (fosetyl-AI) stem treatment	1	1.2
Bavistin (carbendazim)	1	2
Benlate (benomyl)	1	2
Coform (maneb/thiophanate methyl/zinc)	2	1.2

Product (active ingredient) and common trade name	Rating for one application	Additional application factor
oxide)		
Copper oxychloride	2	1.2
RB1 (dipotassium phosphate)	2	1.2
Dithane (mancozeb)	2	1.2
Flint (trifloxystrobin)	1	1.2
Folicur (tebuconazole)	1	2
Kocide (copper hydroxide)	2	1.2
Ortiva (azoxystrobin)	1	1.2
Phytex (Phosphorous acid)	2	1.2
Pyraclostrobin (Cabrio)	1	1.2
Ridomil Gold (metalaxyl M or mefenoxam))	1	1.2
Rovral (iprodione)	1	1.2
Score (difenoconazole)	1	1.2
Topsin flo (thiophanate methyl)	1	1.2
Trimangol (maneb/zinc oxide)	1	1.2
Zineb (zineb)	2	1.2
PLANT GROWTH REGULATORS		
Corasil P	0	1
Ethrel	0	1
Gibberellic acid	0	1
Maxim	0	1
2.4-D	0	1
FOLIAR FERTILIZERS		
Magnesium nitrate	0	1
Potassium nitrate	0	1
Trace elements (Not copper)	0	1
Urea	0	1